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EXAMINER

OSBORNE, LUKE R

ART UNIT	PAPER NUMBER
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2123

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/074,501

Applicant(s)

EL-GHOROURY, HUSSEIN S.

Examiner

Luke Osborne

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Status

1. Claims 1-29 are pending in the instant application.

Claims 1-29 stand rejected.

Information Disclosure Statement

2. The information disclosure statement (IDS) submission on 4/12/2002, is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

3. The information disclosure statement submitted on 7/16/03 contains a discrepancy, the US Patent Number does not match the inventor of the Patent, and therefore the patent on that line has not been considered. However, Examiner has considered this discrepancy to be a typo and the Presumed number for the patent listed is 6,112,023 which has the inventorship Dave et al. Examiner has considered this reference and will place it on the Notice of References Cited form PTO-892. As such Applicant need not resubmit the IDS if 6,112,023 was the intended Patent No.

Drawings

4. Figures 1-6 are objected to by the Draftsperson under 37 CFR 1.84 or 1.152 for the reason(s) attached on form PTO-948.

Specification

5. The Specification is objected to for omitting the Brief Summary of the Invention. Due to the state of the claims as established below a brief description of the invention would be beneficial for the establishment of what Applicant considers the invention to be. Appropriate correction is required.

Content of Specification

- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

Claim Objections

6. Claim 24 is objected to because of the following informalities: Claim 24 recites "an architectural modeling apparatus to decomposing a matched." In order for a clear interpretation Examiner has interpreted this limitation as "to decompose." Appropriate correction is required.

7. Claim 9 is objected to because of the following informalities: Claim 9 line 4 recites "putting a fire () method into the design vector" Examiner objects to the use of the limitation "()" empty set of parenthesis. Parenthetical citations are allowed in the claims only for the purposes of Drawing references. Appropriate correction is required.

Claim Rejections - 35 USC § 112(1st)

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 1 recites as the first step in the method "decomposing the matched instruction set processor system." However, as the preamble states the method provided will "design and implement a matched instruction set processor system." As read it appears the method as claimed designs and implements the system by decomposing the system that is designed by the method. This limitation as recited is not enabled in light of the Specification.

As understood from Applicant's specification it is a design or model not the resultant system that is broken down into interconnected design vectors to design and implement the system. Support for this interpretation is found in Paragraph 40, and generally Figure 2 [Allocation or mapping of the system design to hardware and

software is performed at the latter stages 240, 245 of the Methodology 200. (emphasis added)].

Claim Rejections - 35 USC § 112(2nd)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims presented are replete with 35 U.S.C. 112 deficiencies, the claims analyzed below are representative of the state of the claims.

Claim 1 is indefinite. The preamble of the claim recites, "a method to efficiently design and implement a matched instruction set processor system." However, it is unclear how the recited steps implement anything. Further it is unclear as recited by the claim what is being designed.

The recitation of two possible steps/structure (analyzing and mapping) in the overall scheme of the invention without the rest of the steps/structure required to design and implement renders the claim indefinite due to the substantial lack of elements.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See

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MPEP § 2172.01. The omitted steps are: Designing a matched instruction set processor system, and implementing a matched instruction set processor system.

The term "efficiently" in claim 1 line 1 is a relative term, which renders the claim indefinite. The term "efficiently" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim 15 recites the limitation "the matched instruction set processor system in to interconnected design vectors" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim.

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: a matched instruction set processor system, and interconnected design vectors as stated in the preamble.

The apparatus as recited will decompose a system into interconnected design vectors. However, the apparatus as recited analyzes the execution order of actors, and converts the actors into application specific code. It is unclear to the Examiner how the apparatus as recited as acting on actors, is correlated to decomposing a matched instruction set processor system into interconnected design vectors.

The recitation of two possible steps/structure in the overall scheme of the invention without the rest of the steps/structure renders the claim indefinite due to the substantial lack of elements.

The rejections under 35 U.S.C §112, second paragraph, are meant to be exemplary of the general state of the claims. Therefore, claims not specifically mentioned are rejected by virtue of their dependence but may also contain violations of 35 U.S.C. 1 112, second paragraph themselves.

The art rejections of the claim(s) listed above are applied as best understood in light of the rejection under 112, 2nd paragraph discussed above.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1-14 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

For a claimed invention to be statutory, the claimed invention must be within the technological art. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) that do not apply, involve, use, or advance the technological art fail to promote the "progress of science and the useful arts" (i.e., the physical sciences as opposed to social sciences, for example) and therefore are found to be non-statutory

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subject matter. For a method claim to pass muster, the recited process must somehow apply, involve, use, or advance the technological arts.

As to technological arts recited in the preamble, mere recitation in the preamble (i.e., intended or field of use) or mere implication of employing a machine or article of manufacture to perform some of the recited steps does not confer statutory subject matter to an otherwise abstract idea unless there is positive recitation in the claim as a whole to breathe life and meaning into the preamble. In *Bowman* (Ex parte *Bowman*, 61 USPQ2d 1665, 1671 (BD. Pat. App. & Inter. 2001) (Unpublished), the board affirmed the rejection under U.S.C. 101 as being directed to non-statutory subject matter. Although *Bowman* discloses transforming physical media into a chart and physically plotting a point on said chart, the Board held that the claimed invention is nothing more than an abstract idea, which is not tied to any technological art or environment.

In the present case, although claim 1 recites at the preamble a method to efficiently design and implement a matched instruction set processor system, the steps in the claim body of decomposing the matched instructions, and analyzing and mapping the interconnected design vectors, can be implemented by the mind of a person or by the use of a pencil and paper. In other words, since the claimed invention, as a whole, is not within the technological arts as explained above, these claims only constitute an idea and does not apply, involve, use, or advance the technological arts, thus, it is deemed to be directed to non-statutory subject matter.

Examiner suggests the addition of —computerized—or —computer implemented— in front of method to limit the subject matter to statutory grounds.

Any claim not directly rejected on 35 U.S.C 101 stands rejected due to its dependency.

To expedite a complete examination of the instant application, the claims rejected under 35 U.S.C 101(nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Interpretation for the Application of Prior Art

11. Although MPEP 2143.03 instructs that indefinite limitations must be considered (See *Ex parte Ionescu*, 222 UPPQ 537 (Bd. Pat. App. & Inter. 1984)), Claims 1-29 are so indefinite or replete with errors that Examiner cannot perform a limitation-by-limitation analysis of the claims vs. the prior art. Application of art in this case is strictly for the purpose of compact prosecution and the art cited is believed to be representative of the interpreted claim language.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Marleen Ade et al. "Hardware-Software Codesign with GRAPE" 1995 IEEE, Pages 40-47

Regarding claim 1, Ade discloses a method to efficiently design and implement a matched instruction set processor system. See the Abstract and Figure 2 and the corresponding portions for Ade's disclosure for this disclosure. Further, Ade discloses, a method to efficiently design and implement a matched instruction set processor system [synchronous DSP systems (Abstract)], including: decomposing the matched instruction set processor system into interconnected design vectors [specify the application's data dependency graph in a target machine independent way (Abstract)]; and analyzing and mapping the interconnected design vectors into specific hardware and software elements [After specifying the heterogeneous target machine's architecture, it estimates the resources needed by each application subtask. Based on these requirements, it assign the subtasks to specific target devices at compile-time (Abstract)].

Claims 2-5 further elaborate on the decomposing the matched instruction set processor into interconnected design vectors as resource estimation as disclosed by Ade Page 43, Section 2.2. Resource estimation The resource estimator determines per leaf node one resource tuple detailing the required amount of resources (execution time, memory, CLBs, pins, ...), for each source that has been specified for the leaf node and for each target device the source can be compiled on.

Claims 6-9 further elaborate on the decomposing the matched instruction set processor into interconnected design vectors as code generation. This is disclosed by Ade Page 44 Section 3.1.2 Code generation The last task of the shell generator is to build a main program for each of the target devices. This main program initializes the device, allocates buffer memory, initializes status variables used by each of the subtasks assigned to the device, and starts an infinite time loop. Within this time loop, the subtasks are called (or inlined) in the order determined by the scheduler.

Claims 10-14 further elaborate on the decomposing the matched instruction set processor into interconnected design vectors as model test and verification. This is disclosed by Ade Page 40 Section 1.1 Classification Dependign on the level in the design process, we discriminate functional, bit-compliant, architecture-compliant and timing-compliant verification.

Claims 15-23 recite the machine readable instructions of method claims 1, 2, 6, 8, 10 – 14, thus are rejected for the same reasons as claims 1, 2, 6, 8, 10 – 14.

Claim 24 recite the apparatus of method claims 2 and 6, thus is rejected for the same reasons as claims 2 and 6.

Claims 25 –29 recite the apparatus of method claims 8, 10-13, thus are rejected for the same reasons as claims 8, 10-13.

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO form 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luke Osborne whose telephone number is (571) 272-4027. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LRO



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